UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/976,673	10/12/2001	Sergey Lukyanov	CLON-028	1096

24353 7590 05/31/2006

BOZICEVIC, FIELD & FRANCIS LLP
1900 UNIVERSITY AVENUE
SUITE 200
EAST PALO ALTO, CA 94303

EXAMINER	
MONDESI, ROBERT B	

ART UNIT	PAPER NUMBER
1653	

DATE MAILED: 05/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/976,673	LUKYANOV ET AL.	
	Examiner	Art Unit	
	Robert B. Mondesi	1653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *29 March 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12 and 18-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *3 and 4* is/are allowed.

6)☒ Claim(s) *1-2, 5-12 and 18-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 March 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This Office action is in response to the amendment filed March 29, 2006. **Claims 13-17** have been canceled. **Claims 25-30** are new. **Claims 1-12 and 18-30** are presently pending and under examination.

Drawings

Drawings filed March 29, 2006 have been accepted.

Withdrawal of Objections and Rejections

The objections and rejections not explicitly restated below are withdrawn.

Maintenance of rejections

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 112

Claims 1-2, 20-24 remain rejected and **claims 25-30** are rejected (see explanation below) under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1-2, 5-12 and 18-24 remain rejected and **claims 25-30** are rejected (see explanation below) under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for nucleic acid, SEQ ID NO: 11, encoding the mutant disclosed in

example B.4, on page 33, lines 8-19, of the specification, Fp10-cr1 (hcFRFP-2) (HcRed-2A) does not reasonably provide enablement for nucleic acid wherein said nucleic acid encodes a far red shifted *Stichodactylidaen* chromoprotein or fluorescent mutant thereof wherein the said nucleic acid has a sequence similarity of at least about 75%, 80% or 90% with a nucleotide sequence of SEQ ID NO: 11. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

The above rejections were explained in the Office action.

Response to applicant's arguments

In regards to the rejection of **claims 1-2, 20-24** under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement, applicants assert that the specification on page 8, lines 10-15 specifically discloses the language of the amendment: in many embodiments, the nucleic acids have a sequence that is substantially similar (i.e. the same as) or identical to the specific nucleic acid sequences of the figures and sequence listing included herewith as part of his specification. By substantially similar is meant that sequence identity will generally be at least about 60%, usually at least about 75% and often at least about 80, 85, 90, or even 95% and hence applicants assert that the above language provides the adequate support for that amendment.

Applicants' arguments have not been found persuasive. As stated previously in Office action mailed, January 3, 2006, the type of Markush language disclosure presented by the applicant is not considered to be sufficient written description support

for the specific new limitation that attempts to provide a range of species for a genus of a nucleic acid molecule present in other than its natural environment, wherein said nucleic acid encodes a far red shifted *Stichodactylidaen* chromoprotein or fluorescent mutant thereof; therefore the limitation "wherein said nucleic acid has a sequence identity of at least about 75% with SEQ ID NO:11" is considered to be new matter. New or amended claims which introduce elements or limitations, which are not supported by the as-filed disclosure, violate the written description requirement. See, e.g., *In re Lukach*, 442 F.2d 967, 169 USPQ 795 (CCPA 1971) (subgenus range was not supported by generic disclosure and specific example within the subgenus range); *In re Smith*, 458 F.2d 1389, 1395, 173 USPQ 679, 683 (CCPA 1972) (a subgenus is not necessarily described by a genus encompassing it and a species upon which it reads). The specification of the present application does not disclose specific nucleic acid species that have a sequence identity of at least about 75% with SEQ ID NO: 11, wherein the said species are encompassed by a genus of a nucleic acid that encodes a far red shifted *Stichodactylidaen* chromoprotein or fluorescent mutant thereof. It is appears that applicants were not in possession of the mentioned nucleic acid molecule when the application was originally filed since applicants have only described a variant of the above nucleic acid molecule that may encode a protein with the following substitutions: A2S, T36A, E63A, C143S, L173H, P201L and K204E as compared to a wild type sequence. The protein encoded by the amino acid sequence of SEQ ID NO: 11 is 227 residues in length, applicants have provided written description for a variant with 7 possible substitutions, 227-7=220, 220/227*100=96.9%; therefore it is clear that

applicants have support only for a far red shifted chromoprotein or fluorescent protein encoding nucleic acid molecule that has 96.9% identity to SEQ ID NO:11 and not 75%. It is important to note that newly added **claims 25-30** do not address nucleic acid identity or limit the nucleic acid molecule of the invention but rather state possible substitutions that are encompassed by the scope of the claim; and therefore do not remedy the deficiencies of the claims that they are dependent therefrom.

In regards to the rejection of the **claims 1-2, 5-12 and 18-24** under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for nucleic acid, SEQ ID NO: 11, encoding the mutant disclosed in example B.4, on page 33, lines 8-19, of the specification, Fp10-cr1 (hcFRFP-2) (HcRed-2A) does not reasonably provide enablement for nucleic acid wherein said nucleic acid encodes a far red shifted *Stichodactylidaen* chromoprotein or fluorescent mutant thereof wherein the said nucleic acid has a sequence similarity of at least about 75%, 80% or 90% with a nucleotide sequence of SEQ ID NO: 11, applicants assert that the specification provides ample disclosure to enable one skilled in the art to practice the claimed invention.

Applicants assert further that for example, the subject nucleic acids are described, for example, on page 6, line 23 through page 16, line 2, the particular far red shifted aspect is described, for example, on page 16, line 7 though page 17, line 2, exemplary methods of producing such mutants are described, for example, on page 18, line 7, through page 19, line 17, and in greater detail on page 31, line 16 through page 32, line 2., resulting exemplary mutants are described at, for example, on pages 32-36, constructs, vectors, expression cassettes, and expression systems including the subject

nucleic acids are described, for example, on page 11, line 3, through page 13, line 27, and applications using the subject far red shifted proteins are described, for example, on page 24, line 6, though page 30, line 6.

Applicants also assert that moreover, exemplary methods of producing such variants are described, for example, on page 15, line 16, through page 16, line 2, and in greater detail on page 31, line 16 through page 36, line 15. In addition, the specification also provides abundant description for methods of evaluating a far red shifted property on page 16 as well as in the examples section at, for example, pages 32 and 34. Therefore, in view of such guidance provided in the specification, in combination with the knowledge of one of skill in the art, and experimentation that may be necessary is reasonable.

Applicants' arguments have not been found persuasive. The issue in this case is the breath of the claims in light of the predictability of the art as determined by the number of working examples, the skill level of the artisan and the guidance presented in the instant specification and the prior art of record. The Applicants make and test position is inconsistent with the decisions of *In re Fisher*, 427 F.2d 833, 839, 166 USPQ 18, 24 (CCPA 1970) where it is stated that "... scope of claims must bear a reasonable correlation to scope of enablement provided by the specification to persons of ordinary skill in the art...". Without sufficient guidance, determination of having the desired biological characteristics is unpredictable and the experimentation left to those skilled in the art is unnecessarily and improperly extensive and undue. See *In re Wands*, 858 F.2d at 737, 8 USPQZd at 1404 (Fed. Cir. 1988). Therefore, for the instant specification

to be enabling, it needs to provide direction/guidance regarding whether the structure of the chromo or fluorescent fragment/mutant can tolerate the modifications encompassed by claims and still possess the desired properties or whether a protein that does not have the desired properties may result. Absent sufficient guidance/direction one of skill in the art would not be able to practice the claimed invention commensurate in scope with the claims. Just because the applicants have disclosed all the relevant known molecular biology methods for determining the effectiveness of possible mutations with regards to the product of the invention it goes not mean that enablement commensurate with the scope of the claimed invention has been provided and this is due to one extremely important fact. Applicants have not explained which portion or segment of the encoded protein is essential for the claimed activity of the protein, without such information a person skill in the art would not know if the change in the encoded protein will be one that compromises the effectiveness of the protein. Therefore without further experimentation that clarifies the essential residues required for the activity of the said protein, it would not be possible to make or use a nucleic acid that has 75% identity to SEQ ID NO:11 and encodes a protein that is a far red shifted chromoprotein or fluorescent protein and the need for the mentioned further experimentation with regards to the claimed functionality of the claimed product is considered to be undue. It is important to note that newly added **claims 25-30** do not address nucleic acid sequence identity or limit the nucleic acid molecule of the invention but rather state possible substitutions that are encompassed by the scope of the claim; and therefore do not remedy the deficiencies of the claims that they are dependent therefrom.

Conclusion

Claims 1-2, 5-12 and 18-30 are rejected.

Claims 3-4 are allowed.

Accordingly, **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert B Mondesi whose telephone number is 571-272-0956. The examiner can normally be reached on 9am-5pm, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jon Weber can be reached on 571-272-0925. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JON WEBER
SUPERVISORY PATENT EXAMINER

Robert B. Mondesi
Patent Examiner
Group 1653

Robert B. Mondesi
5-30-06